

## **SECTION 16470**

### **PANELBOARDS**

#### **PART 1 - GENERAL**

##### **1.1 SUBMITTALS**

- A. Shop drawings:
  - 1. Identify panelboards by alphanumeric designation with branch circuit breaker sizes and types indicated in panelboard schedules or one-line-diagram.
- B. Product data:
  - 1. Technical data on each type of panelboard.
  - 2. Specification comparison.
- C. Contract closeout information:
  - 1. Operating and maintenance data.

#### **PART 2 - PRODUCTS**

##### **2.1 LIGHTING AND POWER PANELBOARDS**

- A. Acceptable manufacturers:
  - 1. Panelboards:
    - a. Base: Same manufacturer for all panels on project.
      - 1) Cutler Hammer/Westinghouse.
      - 2) Square D.
      - 3) Siemens Energy & Automation.
      - 4) General Electric.
  - 2. Other manufacturers desiring approval comply with Document 00440.
  - 3. Cutler Hammer/Westinghouse types listed for quality and performance reference.
- B. All panelboards: Dead front type.
  - 1. Provide with non-insulated equipment grounding terminal strip located in top or bottom gutter including main grounding lug and individual terminals for at least 50 percent of panel circuits including spare circuits; increase gutter space accordingly for grounding strip.
  - 2. Provide lighting panelboards with branch circuit connection to main bus arranged for sequence phasing.
  - 3. Provide feed-thru lugs or sub-feed lugs for 2 and 3 section panels.
  - 4. Equip bus bars for panelboard with main lugs, main fused switch or main circuit breaker, capacity as required or indicated.
  - 5. Provide special features such as split bus, lighting contactors, extra-width gutters as required.
  - 6. Provide panelboard buses fully rated for specified interrupting rating. Series rating of panelboards and overcurrent protective devices is not acceptable.
  - 7. Panelboards served by a K-rated transformer shall be provided with a single 200 percent neutral bus.
- C. Circuit breaker panelboards:
  - 1. Bolted-on circuit breaker type. Plug-in circuit breakers not acceptable.
  - 2. Sub-feed circuit breakers not acceptable.
  - 3. In larger power and distribution panelboards, provide main buses and back panels which permit changing of circuit breakers without additional machining, drilling or tapping.
  - 4. All multi-pole breakers of single handle and common trip.

5. All multi-pole breakers, 100A rated and larger shall include means for padlocking in off position.
  6. Provide shunt trip mechanism on breakers where indicated.
  7. Provide ground fault protection as indicated coordinated with upstream devices.
  8. Design so a combination of one, two and three pole circuit breaker can readily be assembled in the same panelboard.
  9. Multi-section panels shall have equal height boxes.
  10. 100A main rated panel:
    - a. 120/208 V, 3 phase, 4 wire: Type PRL1a, PRL2a or PRL3a.
  11. 225A main rated panel:
    - a. 120/208 V, 3 phase, 4 wire: Type PRL1a, PRL2a or PRL3a.
  12. 400 to 600A main rated panel:
    - a. 120/208 V, 3 phase, 4 wire: Type PRL3a.
- D. Circuit breakers: Thermal-magnetic type unit construction, employing quick-make and quick-break toggle mechanisms for manual operation as well as automatic operation.
1. 1, 2 and 3 pole circuit breaker ratings:
    - a. In 120/208 V panelboards: Minimum 14,000 AIC symmetrical, or greater as indicated.
  2. Handles with three positions: "OFF", "ON", and "TRIPPED".
  3. When circuit breaker opens on overload or short circuit, operating handle shall automatically assume "TRIPPED" position and clearly indicate abnormal condition of circuit.
  4. Units operable in any position and removable from front of panelboard without disturbing adjacent units.
  5. Tandem or half-size circuit breakers not allowed.
- E. Cabinets: Trim, door and box, of galvanized sheet steel, code thickness.
1. 5-3/4 IN deep with gutter space meeting NEC Article 384 requirements for wire termination space in panelboards.
  2. Distribution panelboards: Cabinet depth not to exceed 12 IN, with gutter space meeting NEC Article 384 requirements for wire termination space in panelboards.
  3. Fasten trim to cabinet by means of approved adjustable clamps.
  4. Equip door with chrome-plated combination lock and catch; supply two milled keys with each lock; key locks alike.
  5. Provide directory frame on inside of door.
  6. Finish: Primed, one coat gray lacquer.
  7. Identify all circuit locations in each respective panel with load and location served.
    - a. Directory shall be typed.
    - b. Mechanical equipment identified in directory shall be identified by Government-furnished designation and not designation indicated on plans.
    - c. Room names and numbers in directory shall be final building room names and numbers as identified by Government and not name or number indicated on plans.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. Install as indicated and in accordance with manufacturer's recommendations and instructions.
- B. Support panelboard cabinets from wall studs or unistrut cross members bolted to studs.

### **3.2 LABELING**

- A. Provide panelboard labeling as specified in Section 16010.

- B. Permanently post, at each panelboard, the conductor color coding scheme specified in Section 16120 as required by NEC Article 210.

**END OF SECTION**